# Sonoma County Water Agency
# Stream Maintenance Facts

## Background:

- The Agency owns, or has easements to maintain hydraulic capacity, on approximately 75 miles of engineered flood control channels.
- The channels are primarily located in the vicinity of Santa Rosa, Rohnert Park, Cotati, Petaluma, and Sonoma.
- The Agency also has easements to maintain hydraulic capacity over approximately 100 miles of modified or natural channels.

## Evolution of stream maintenance:

- Since the initial flood management programs of the 1950s, routine maintenance needs have continued to be assessed and prioritized through seasonal and annual inspections with various sediment removal, bank stabilization, and vegetation management activities prioritized as necessary following inspections.
- The mandate and requirement for routine annual maintenance to provide adequate flood protection has not wavered since the construction of the stream and channel facilities. However, the Agency's perspective towards stream management has evolved and now includes multiple objectives such as resource protection and environmental sustainability in addition to flood management.
- Local, state, and federal regulations and their requirements have also changed over time. Compliance with federal laws and regulations such as the Endangered Species Act (ESA) and Clean Water Act (CWA) as well as state laws and regulations administered by the Department of Fish and Game and Regional Water Quality Control Board require an extensive authorization process each year for the Agency's planned activities.

## Importance of steam maintenance:

- Stream maintenance activity is primarily for enhancing flood protection and water quality.
- By managing vegetation in the waterway, we can retain the water-carrying capacity of the channel, thereby maintaining protection against floods.

- When considering removal of vegetation, we must also consider its habitat value to fish and wildlife. Trees, in particular, provide protection for fish while also shading the water, which helps to keep the temperature cool.

- Planning and performing stream maintenance requires a careful balance of flood protection and environmental protection.

- All of the stream maintenance activities we perform are permitted by both the Regional Water Quality Control Board and the California Department of Fish and Game.

## When is maintenance performed?

- The allowable window for performing stream maintenance is actually very small. We can't start work until the site is free of nesting birds, and all activities in the stream channels must be complete by Oct. 15, before the rainy season. So we must work quickly once our biologists determine that the nesting is complete.

## How do we choose the sites to maintain?

- Each year, we perform an inventory, including flow models, and compare each site's estimated water-carrying capacity against its design capacity. Based on the results, we prioritize approximately ten miles of stream each summer for maintenance.

## Routine maintenance activities in engineered channels

**Sediment Management**

Sediment management refers to the removal of excess sediment from engineered flood channels. Sediment management activities are generally conducted from June 15th to October 15th when streams are typically at their driest. The number of sediment removal projects undertaken and the quantity of sediment removed in a given year depend on the frequency and extent of past maintenance activities, as well as weather and hydrologic conditions during recent years. Sediment management needs following a wet winter with higher than usual runoff, slope erosion, and sediment delivery to (and transport within) the engineered channel system will likely be greater than maintenance requirements following an average or dry winter.

The Agency's preferred approach for sediment removal projects is to use the least environmentally damaging approach that is reasonable, not prohibitive in cost, and time-efficient. The Agency looks for opportunities to improve channel structure and install a system that is self-sustaining and will require less maintenance in the future. One common design feature is the installation of a low-flow channel. This type of design helps transport sediment through the system instead of allowing it to settle out and build up in the channel, thereby reducing the need for regular sediment removal, and correspondingly, cattail removal. In addition, low-flow channels are beneficial because they provide deeper water habitats that tend to stay cooler in summer and provide better habitat to aquatic species. The Agency also considers appropriate locations to target sediment deposition and develop in-channel sediment basins to ease channel access and reduce channel access impacts.

**Bank Stabilization**

The Agency performs repairs of eroding banks as a routine maintenance within the engineered channels where it has maintenance authority. Bank stabilization involves the repair and stabilization of eroded or eroding stream or reservoir banks. Destabilized banks that are not repaired will continue to erode and shed sediment into the channel. The Agency's approach for stabilizing banks includes minimizing hardscape by back-filling with soil, installing erosion control fabric, seeding with grasses and planting of native riparian trees to provide additional bank stability and increase canopy in the channel.

**Vegetation Management**

Vegetation management in engineered channels is organized according to the type of activity. The degree of vegetation management performed depends on local reach conditions, neighboring land uses, and existing channel conveyance capacity. Vegetation management activities include: willow pruning and removal; blackberry removal; cattail removal; ludgwigia removal; tree pruning and exotics removal; mowing; and nursery stock tree planting. Vegetation management activities are overseen by a biologist, certified arborist, or other qualified personnel.

The activities are completed with the goal of transitioning the streams into waterways that not only provide flood protection, but also provide good riparian habitat and water quality. The goal is a mature riparian canopy with alders, maples, and other trees that grow tall and stretch their branches over the creek. Over the long-term, the establishment of a mature riparian canopy is expected to reduce the level of routine maintenance that is required. This will be completed over several years by selectively thinning and brush and multi-trunk tree species and planting single-trunk, canopy forming trees on stream banks. View our conceptual planting diagram.

**Other Maintenance Activities include:**

Access Road Maintenance
V-Ditch Maintenance
Culvert Repair and Installation
Debris Removal
Fence Maintenance
Graffiti Removal